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# FORESTS OF ALASKA



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# THE FORESTS OF ALASKA

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Alaska has two distinct classes of forest growth. One is the "interior forest," which occupies the greater part of the large Central Plateau region, principally the drainages of the Yukon, Tanana, Kuskokwim, and Copper Rivers, and the streams emptying into Cook Inlet. The other is the "coast forest," which is confined to and is the prevailing type in southeastern Alaska and the Prince William Sound region. The interior forests stand for the most part on the open public domain, while the coast forests have largely been included in the national forests of Alaska.

## THE NATIONAL FORESTS

Alaska has two national forests comprising a total area of 20,880,000 acres. The Tongass National Forest consists of 16,080,000 acres and includes the greater part of the region popularly known as southeastern Alaska. The Chugach National Forest covers the timber belt on the shores of Prince William Sound and has an area of 4,800,000 acres.

The Tongass and Chugach forests were set apart from the open public land area between 1902 and 1909. They have been placed under the supervision of the Forest Service for development and management in the interests of the permanent good of the region and the Nation. All of the national-forest resources are available for use. The timber stand is so handled as to insure continuous forest productivity. Standing timber can be purchased for use, as needed, by local manufacturing industries and individuals. Land most valuable for agriculture, mining, industrial plants, and town sites can be patented; areas needed for water-power development, fox farming, and other special purposes may be leased; tracts are made available for summer homes; public recreation facilities are provided; hunting and fishing are fostered.

**Timber Resources.**—The estimated stand of commercial timber is as follows:

Tongass .....	78,500,000,000 feet, b. m.
Chugach .....	6,260,000,000 feet, b. m.

The commercial timber fringes the shores of the mainland and the hundreds of adjacent islands, rarely extending inland for a greater distance than 4 or 5 miles or to a greater elevation than 1,500 feet. A very sinuous coast line makes much of the timber readily accessible. The two forests have 12,000 miles of shore line and 75 percent of the timber is estimated to be within  $2\frac{1}{2}$  miles of tide-water. The average volume per acre of the merchantable stand is around 26,000 board feet. On limited areas, there are much higher volumes and tracts now being cut for sawlogs frequently average between 40,000 and 50,000 board feet per acre.

The tree species, with the relative importance of each in the total stand, are:

Western hemlock, 73 percent; sitka spruce, 21 percent; western red cedar, 3 percent; alaska cedar, 3 percent.

The typical forest of the Tongass is a mixture of hemlock and spruce in about the percentages given, with a small quantity of either one or both kinds of cedar. On the Chugach Forest the amount of cedar is negligible.

**Sitka spruce** is the most valuable tree of Alaska and one of the most generally useful trees in the United States. The lumber is in good demand for a great variety of uses, ranging from packing boxes to interior finish, and the fiber is unequalled by that of any other Pacific Coast tree for manufacture of wood pulp.

Although the spruce grows largely in combination with hemlock, areas of pure spruce are common, and these furnish the great bulk of the saw timber now being cut for local use and for export to continental United States and foreign countries. The trees are very large, frequently having a diameter of 7 feet and height of 200 feet, but the mature trees average about 5 feet in diameter and 160 feet in height.

The trunk of the Sitka spruce is well formed above a pronounced butt swell and is clear of large branches for the greater part of its length. When growing in combination with other species, its greater diameter, shaft-like trunk, and overtowering height make spruce very distinctive and impressive. It is commonly sound and straight-grained, but exceptionally large trees are frequently af-



fectured with butt and heart "rot," and on exposed locations the timber may show wind shake and spiral grain.

**Western hemlock** of Alaska is chiefly valuable for the manufacture of pulp and paper, since the smaller trees and the greater distance from market prevent Alaska from competing with Puget Sound in hemlock lumber, which, when compared with paper, is a low-grade product that cannot stand the cost of a long freight haul. Hemlock is one of the outstanding sulphite pulpwoods of the world, and it also makes an excellent grade of mechanical pulp. The sulphite pulp and newsprint mills of Washington, Oregon, and British Columbia use more wood of this species than of any other because of its satisfactory qualities and lower cost.

Although spruce is the principal lumber tree in the Alaska region, hemlock lumber is cut in considerable quantity for local use, being preferred for heavy flooring and decking and for timbers to be used in buildings, bridges, and wharves. It is also used locally in large quantities for piling for wharves and driven fish traps. Many of the fish-trap piles are between 100 and 130 feet in length.

The hemlock trees of the region commonly reach diameters of 3 to 4 feet, but perhaps 50 percent of them are from 18 to 30 inches in diameter. The height ranges from 100 to 140 feet. Trees larger than 3 feet in diameter are inclined to be defective as they are largely overmature, but many of these defective large trees fall below the requirement for merchantability as defined in Forest Service timber contracts and need not be cut. The trees below 3 feet in diameter are well formed and clear of heavy branches for at least three-fourths of their length and usually carry little defect.

**Cedars** of Alaska are principally valuable for shingles, telephone poles, and specialized forms of lumber. The market for the cedars is very limited at present, and operators are required to take only marketable trees from the logging area.

**Free Use of Timber.**—Settlers, miners, and residents may take free of charge, green or dry timber from the national forests in Alaska for their personal use but not

for sale. No permit is required except for green saw timber.

**Local Lumber Industry.**—Most of the timber used locally on the coast of Alaska is taken from the national forests, including the requirements of about 18 sawmills cutting for the local trade and for shipment from the Territory. The two principal forest products are sawlogs and fish-trap piling.

Timber may be purchased as needed, or a unit capable of providing a supply for a number of years may be contracted. The material is paid for as cutting proceeds, on the basis of a log scale made by the local forest officers. The prices being received for stumpage now average about \$1.50 per M feet for spruce and cedar, and \$1 per M feet for hemlock.

The two largest sawmills, located at Juneau and Ketchikan, have entered the export lumber markets and this class of business is increasing in importance.

About 28,000,000 feet of timber was cut from the national forests in the calendar year 1938. Since 1909, 1,116,000,000 board feet has been cut.

The Forest Service is now actively investigating the possibilities for development of minor wood-using industries. A multiplicity of such small year-long enterprises would assist greatly in relieving the condition of seasonal unemployment that now faces most Alaska workers.

**Development of the Pulp and Paper Industry.**—The great future forest industry of Alaska is manufacturing of pulp and paper, especially newsprint paper. The extensive forests are well suited to this use, abundant water power is available for the conversion of the raw material, and the region has other advantages that will contribute to the success of the industry.

The national forests are capable of producing more than 1,000,000 tons of newsprint paper annually in perpetuity. This amount is more than one-fourth of the present total requirements of the United States.

Cheap and abundant power is second only in importance to the timber supply in the development of the newsprint industry, and this exists in Alaska in the form of



water power. Almost 300,000 horsepower is required for an annual production of 1,000,000 tons of paper. Investigations made to date show that the available power is more than ample.

Other favorable factors for the industry include water transportation for logs from the woods to the mills and for paper from the mills to market ; low logging costs because of readily accessible timber and the high volume per acre ; and a climate which permits of mill operations and shipping throughout the year. Changing conditions in the paper industry indicate that Alaska should become an important source of supply for newsprint.

Extensive investigations are being made by the Forest Service of the possibility for the industry on the Tongass Forest. Tracts of pulp timber totaling 900,000 acres have been cruised and mapped, and all of the larger power sites have been surveyed to show their capacities and cost of development.

The Forest Service methods of procedure in the sale of timber and the principal features of the contracts that have been offered prospective pulp and paper operators are as follows :

1. The standing timber only is offered for sale. Title to the land is retained in the United States to insure renewal of the timber supply.

2. All timber is sold to the highest responsible bidder after advertisement for not less than 30 days.

3. Timber is paid for in installments as cutting progresses and on the basis of a scale made by a forest officer at the time of cutting.

4. All merchantable timber on the sale area except a small percentage left for reseedling purposes is to be taken. The timber left ordinarily covers small groups of trees in which no cutting is done, and not individual trees scattered over the area logged. On areas where it appears desirable to do so, the operator may be required to lop the tops and limbs left so that the brush lies close to the ground.

5. Pulpwood contracts have been offered which include as a maximum a 50-year supply of timber for very large

newsprint plants. The beginning of the 50-year contract period follows a period of 3 to 4 years allowed for necessary investigations and plant construction.

Additional assurance of future timber supplies is provided by the general Forest Service policy of managing timber resources on a sustained-yield basis. No timber for additional prospective mills in a given locality will be sold if the future supply available through forest growth in that locality is needed for the continued operation of existing mills. This policy gives stability to timber-using communities by providing against future depletion of the resource.

6. Timber for pulpwood has been advertised for sale at 60 cents per 100 cubic feet for spruce and 30 cents for hemlock. This volume unit roughly equals one cord of solid wood. In terms of board feet the rates are approximately equal to \$1 per M feet for spruce and 50 cents per M feet for hemlock.

7. The stumpage rates are subject to readjustment at regular intervals to make them conform with current prices for similar timber in the region. The initial stumpage rates provided for in the contract may apply for a period of from 5 to 10 years of operation; thereafter, rates may be readjusted every 5 years to make them conform with the current values of stumpage in southeastern Alaska. Safeguards against any possibility of confiscatory future stumpage rates are provided.

**Water Power.**—The national forests possess an abundance of water power in units of suitable size for individual industrial plants. The best sites range from 5,000 to 30,000 horsepower in capacity and can be very economically developed for a year-round supply. A typical power site has a high "hanging lake" a short distance inland that provides excellent water storage facilities, requires short conduits to connect the lakes with powerhouses located at tidewater, and the power can be used for paper manufacture where developed so that transmission lines are unnecessary. In many cases power from a number of sites can be concentrated readily at one industrial plant, if so desired, by the use of short transmission lines.

A survey has been made by the Forest Service, Geo-

logical Survey, and Federal Power Commission of the principal known power sites of this region. The sites covered have a total year-round capacity of about 800,000 horsepower. Fifty power sites with an aggregate capacity of 22,000 horsepower have been developed and are now in use.

All water-power sites are publicly owned and can be leased under the Federal Power Act for periods as long as 50 years.

**Recreation.**—The national forests include some of the best recreation areas in Alaska. They embrace an intricate system of narrow, navigable, protected waterways, hundreds of miles in length, and flanked with high rugged mountains rising from the water's edge. Many of the waterways have the winding courses and sheer rock walls that characterize the fiords of Norway. The lower slopes of the mountains are clothed with evergreen timber from the shoreline to elevations between 1,500 and 2,000 feet, where the timber gives way to grass; the latter, in turn, is superseded by perpetual snow on the highest summits. Long waterfalls are seen on the steep-sloped ridges. Blue glaciers flow down the canyons at the heads of the fiords in the coast mountains to discharge into the sea or melt away when they reach the plains at the valley outlets. Huge sections of the forest area are wilderness, without evidence of human occupation or use.

Hunters with gun and camera from all over the world visit this area for the purpose of hunting or viewing the wild game, principally the Alaska brown bear, the largest carnivorous land animal in the world, and his close kinsman and rival in popular interest, the grizzly. Wildlife of great abundance and variety populates the hills, valleys, and waters of this frontier land. The animals are readily accessible, but sensible game management guarantees to the American people the perpetuation in large numbers of the game and fur bearers here. Nonresidents coming into the Territory are advised to obtain a copy of the Alaska Game Laws from the Alaska Game Commission. These laws are strictly enforced.

The principal species of local animals and birds are the Alaska brown bear, found on the mainland and on Admiralty, Baranof, and Chichagof Islands together with

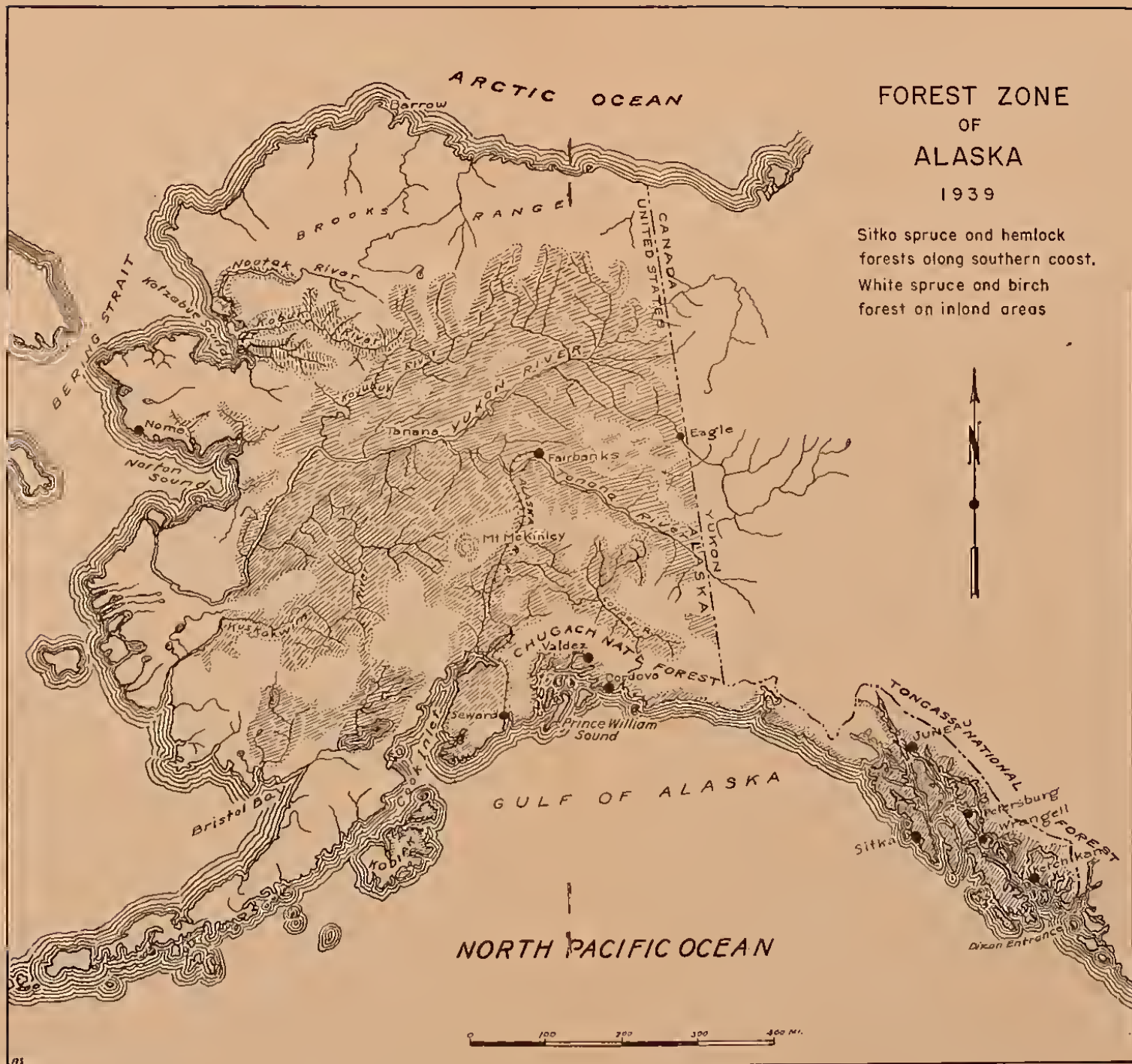




# FOREST ZONE OF ALASKA

1939

Sitka spruce and hemlock  
forests along southern coast.  
White spruce and birch  
forest on inland areas



the adjacent smaller islands such as Yakobi and Kruzof in southeastern Alaska, and on Kodiak and Afognak Islands and several of the larger islands in Prince William Sound; grizzly bear, which frequents the Coast Range of the mainland; the black bear, well distributed throughout the region except on the large brown bear islands; moose in the lower Unuk, Stikine, and Taku River valleys on the Tongass and on Kenai Peninsula on the Chugach; mountain goat throughout the high section of the mainland; Sitkan deer, quite plentiful and ranging as far north as Glacier Bay, principally on the islands; mountain sheep on Kenai Peninsula, principally in the drainage tributary to Kenai Lake; fur bearers, such as beaver, mink, marten, land otter, weasel, muskrat and marmot; native upland game birds, including the sooty and ruffed grouse, the rare Richardson grouse, and three varieties of ptarmigan; migratory ducks and geese; and many other varieties of birds and waterfowl.

Clear mountain streams and lakes plentifully stocked with fighting trout are found everywhere. The important species are cutthroat, rainbow, steelhead (in season), and Dolly Varden trout. A license for any type of sport fishing is not required. The Forest Service has built trails and shelter cabins in connection with most of the favored spots and maintains light cedar skiffs on many of the lakes.

Sport fishing for salmon is a new activity that has taken firm hold here. "Strip" fishing, as it is generally known, consists of drawing the line in short arm lengths over the hand holding the pole as the bait is being drawn to the surface. The prevailing lure is a strip from the side of a herring but other lures, such as plugs, spoons, and flies, are finding favor. The most popular equipment, comparatively inexpensive and obtainable at local stores, is a 6-ounce rod, 35-pound test raw silk line and 15-pound leaders on a heavy reel, and small spinning hooks. Almost any channel where salmon run is a good fishing hole. The thrill of landing a 30-pound King salmon or 15-pound Coho by this method will long be remembered.

The middle section of Admiralty Island contains a generous sprinkling of beautiful lakes ranging in size from small ponds to several square miles. It is a real wilderness



area on which the Forest Service has placed a system of simple trails, portages, shelter cabins and row boats and which offers excellent fishing, hunting, boating, hiking, picture taking, nature study, and mountain climbing. Here the visitor can enjoy typical southeastern Alaska conditions and his outing, as he chooses, can be restful and mild or strenuous and wild. The focal point of the Admiralty Island Recreation Area is Camp Sha-heen on a lake 12 miles in length, the largest of the Admiralty Island lakes. Three main trails lead from tidewater to this area, but most visitors prefer to take the 25-minute ride by chartered seaplane from Juneau. Sha-heen Camp has an attractive log cabin, which contains all essential heavy camp equipment such as stove, utensils, and bunks. This cabin is open to the public without charge.

Some of the areas developed by the Forest Service for picnic use, swimming, and other forms of outdoor recreation are located at Ward Lake on Tongass Highway out of Ketchikan, Falls Creek near Petersburg, and Mendenhall Valley and Auke Village on Glacier Highway near Juneau. Among the improvements constructed are community building, picnic shelters, stoves, and bathhouses. Of unusual interest is the Mendenhall Rifle Range, located in an unrivaled setting of glacier, iceberg-filled lake, high peaks, and forest cover. It has a rustic shooting house and six concrete butts with targets on firing ranges between 100 and 1,000 yards. The range is open to visiting shooters.

Recreation on Kenai Peninsula centers principally around Kenai Lake. The boating, hunting, and fishing here are unexcelled anywhere. The famous Russian River rainbow trout may be taken about 6 miles from the outlet to the lake. There are two places on the lake where accommodations for stop-over tourists are available.

Many waterfront areas along the highways are available for occupancy by individuals who desire to construct summer homes. Quite a number of cabins now dot the shorelines near centers of settlement.

A number of winter recreation developments have been constructed by the Forest Service, through the CCC, adjacent to various communities. These consist of ski

trails and jumps, slalom and downhill courses, and skating facilities.

**Fox Farms.**—The propagation of blue foxes has developed very intensively on the Alaska national forests in the last 15 years. Many of the smaller islands offer excellent locations for this industry as they can be turned over to the exclusive use of the fox rancher; no fencing is required; their isolation is discouraging to poachers; and fish, the principal fox food, can be obtained near at hand.

The islands are occupied under leases granted by the Forest Service, with a nominal yearly rental fee. One hundred and eleven islands are now under lease by the fox-farming industry.

**Agriculture.**—The national forests of Alaska are comprised largely of mountainous lands unsuitable for agriculture. Extensive potential farm lands in the same regions were either not included in the original national forest withdrawals or were eliminated from the forests at an early date. There are, however, isolated areas sufficiently large for a small group of homesteads that are valuable for this use. Three hundred and forty-nine areas have been listed for homestead entry since the forests were withdrawn. Examination of lands applied for and survey of claims for patent are made free of charge to the homesteader.

**Homesites.**—An Act of Congress passed in 1927 permits the purchase by individuals of a homesite of not to exceed 5 acres of public land in Alaska at \$2.50 per acre. Residence for 3 years with exclusion of a home elsewhere is required before the land can be patented. The Forest Service blocks out homesites in advance of application to promote orderly development and to expedite settlement. They are laid out in groups around existing and prospective community centers in order that they may share in road, school, and other public social facilities. Two hundred and six homesite permits are now in effect on the national forests, and 165 homesite areas have been eliminated as the first step toward obtaining patent.

**Industrial Plants.**—Sites on the national forests which are occupied by industrial plants having substantial investments and an appearance of being permanent industries can be eliminated from the forest status and pat-

ented under the Trade and Manufacturing Site Act for Alaska. Thirty such elimination surveys have been made to date.

**Roads and Trails.**—An extensive road and trail program is in progress to make the national forests more accessible. It is financed from direct Federal appropriations for this purpose and from funds received from the sale of timber and other resources, 10 percent of which under the law is allotted to such use. The roads connect isolated agricultural settlements, small towns, and mining districts with the principal towns and navigable waterways. The trails open up new regions for mineral prospecting, recreation, and general development. Approximately \$11,500,000 has been spent for such roads and trails to June 30, 1939.

**Town Sites.**—When a new community center is formed the Forest Service subdivides the area into streets and lots to insure orderly development of the town. The lots are rented for a nominal yearly fee until the population is sufficient to maintain town government, when the area is eliminated from the national forest to permit titles to be obtained under the general town-site laws. Planked and graded streets have frequently been built to stimulate the growth of new communities. Eight towns of this kind have been eliminated for patenting to date.

**Portion of Receipts for Schools and Roads.**—Twenty-five percent of the gross receipts of the national forests from timber sales, occupancy permits, etc., are turned over to the Territory for schools and roads. The amount so paid to the Territory for the fiscal year 1939 was \$14,390. The total amount between 1906 and 1939 was \$534,000.

**Administration.**—The national forests of Alaska are administered by a branch of the Forest Service resident in Alaska. Only matters involving important questions of general policy are referred to Washington, D. C., a procedure which expedites action in dealing with the public. The chief administrative officer is the Regional Forester with headquarters at Juneau. Subordinate officers handle local business with the public at Seward, Cordova, Ketchikan, and Petersburg. Eight launches are maintained for work along the coast.

## THE INTERIOR FOREST

The Central Plateau region of Alaska is within the zone of the white spruce-white birch forest type, which grows throughout the subarctic belt of North America from Newfoundland to Bering Sea.

The vegetative cover of central Alaska has never been mapped, but the zone within which there is timber probably covers as much as 340,000 square miles, or about 220,000,000 acres. The area actually in tree growth is roughly estimated to be 80,000,000 acres. Of this total, 40,000,000 acres consists of fairly dense stands with well formed trees having a maximum diameter of about 30 inches. Another 40,000,000 acres comprises open woodland with scattered limby trees. The total timber volume, estimated conservatively at 5 to 7 cords per acre for the entire area in tree growth, amounts to about 500,000,000 cords.

The Central Plateau Region has other types of vegetation that have close physical and economic relationships with the timber. They consist of the true grasslands, which cover extensive areas, and an even larger patch-like arrangement of brush, tundra, coarse grass, and peat moss intermixed with stands of stunted, pole-size black spruce. All these classes of vegetation help make up the cover of the forest zone of 220,000,000 acres.

The forests of fairly dense stands are the most important commercially for utilization. They are composed of varying percentages of white and black spruce, the latter a very slow-growing species, and white birch with frequent admixtures of cottonwood. In many places the spruce grows in practically pure stands, while in others the white birch is predominant. The forests of this class reach their best development on deep, well-drained soils of benches and valley floors, especially in the watersheds of the Susitna and Matanuska Rivers of the Cook Inlet region, the main Yukon, and the Tanana Rivers. The trees seldom exceed 30 inches in diameter and 50 or 60 feet in height, and are usually limby.

The open woodland consists principally of a thin stand of small white birch, white spruce, balsam poplar, and aspen in varying mixtures. No sharp line of demarcation



exists between the open woodland and the dense forests. In general, the timber cover assumes the open woodland form on the poorer soils and more exposed sites.

The timber line is low, generally between 500 and 1,000 feet above the main valley floor. Local conditions unfavorable to tree growth hold the timber line to much lower limits in many places.

The timber of the Central Plateau is unlikely ever to move into general world markets because of its remoteness and small size, but it can contribute substantially to the home-making needs and industrial activities of the local population of this growing pioneer region.

The two principal species, white spruce and white birch, taken together, supply many of the needs of local industry and settlement covering a great range of products from fairly heavy timbers to furniture and fuel. Small sawmills widely scattered throughout interior Alaska cut white spruce lumber for mine flumes, residences, and other local uses.

The open woodlands, brush, grass, and tundra areas support exceptionally large populations of various big game and fur-bearing animals in which the whole of America has a keen interest. These lands can also supply forage for an extensive domestic livestock industry when economic conditions call for their use for this purpose. The vegetative cover in all of its forms helps to conserve the scant rainfall of interior Alaska for use by the important local placer-mining industry. Again, the several kinds of vegetation contribute materially to the exceptional natural beauty of Alaska.

The White occupation of interior Alaska, which began substantially in the gold-rush days of the early nineteen hundreds, brought with it the blight of extensive forest fires. Annual precipitation in the region is less than 15 inches, the summers of almost continuous daylight are dry and warm, and the ground cover of moss and larger plant growth is highly inflammable. Widespread and repeated burns have naturally resulted from the hazardous conditions. Fire should be brought under control at the earliest possible date, both to conserve the natural vegetative resources for present and future economic use, and

to preserve the scenic beauty and wildlife of this last extensive wilderness on United States soil. The land involved is almost entirely in Federal ownership and under the administration of the Department of the Interior. The General Land Office of the Interior Department started systematic fire protection here in 1939 with an allotment of \$37,500 and a small organization. This effort will doubtless be enlarged in scope in succeeding years. All local residents, as individuals and through their public and quasi-public organizations, should advocate and practice the outdoor code, "BE CAREFUL WITH FIRE—**IT PAYS.**"





